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**Voluntary Turnover:
A Review of the Literature**

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Voluntary Turnover: A Review of the Literature

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FOREWORD

The literature search summarized in this report was conducted as part of an effort to reduce the attrition in the Naval Reserve Officer Training Corps (NROTC) scholarship program. The search was designed to identify individual difference and organizational variables that show promise for inclusion in future research and that might eventually form the basis for improvements to the NROTC program itself or to the NROTC selection system.

This project was funded jointly by the Chief of Naval Operations (OP-114) and the Chief of Naval Research. The research follow-on to this review is expected to benefit the Navy by reducing the cost of training high-quality naval officers.

JOHN J. PASS
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SUMMARY

Problem

➤ Attrition from the Naval Reserve Officer Training Corps (NROTC) scholarship program typically runs about 50 percent over the tenure of a cohort group. In view of the considerable cost of the scholarship program, a reduction in attrition could have substantial financial impact for the Navy.

Objective

The objective of this effort was to review the literature on factors that related to voluntary turnover. This information would in turn be used to identify variables for use in future research designed to modify the NROTC selection system or program so as to reduce this turnover.

Approach

Applied psychology and education journals, technical reports, and convention proceedings were searched manually for studies of voluntary turnover. A computer search was also completed using the contractor's data base. The review was limited to four major areas--models of turnover, demographic variables, psychological variables, and work-related variables--and to studies which presented or review empirical findings or discussed a model of the turnover process. Studies of college and military training attrition were especially emphasized.

Results

➤ A number of the studies reviewed suggest that there are individual difference and organizational variables which relate to voluntary turnover. Among the individual difference variables are personality factors, interests, biographical information, job satisfaction, and organizational commitment. Organizational variables include such factors as supervisory style, size of work group, job challenge, and clarity of work role.

Conclusion

Based on results of this literature search, it appears that certain individual difference and organizational variables should be evaluated further for potential application in reducing NROTC attrition. (S. K.)

CONTENTS

	Page
INTRODUCTION	1
Models of Turnover	1
Demographic Variables	3
Age	4
Race	5
Gender	6
Family Responsibilities	7
Education	8
Tenure	9
Psychological Variables	10
Ability	11
Personality	11
Vocational Interests	13
Biographical Information	14
Job Satisfaction	15
Organizational Commitment	16
Work-Related Variables	18
Job Content	18
Supervisor Characteristics	20
College Attrition	21
Military Training Attrition	23
REFERENCES	29
DISTRIBUTION LIST	35

INTRODUCTION

Voluntary turnover of employees or trainees often represents a substantial problem for the organization. Resources allocated for the training or employment of an individual who subsequently attrites are typically not recovered in production or service. Evidence indicates that high turnover results in a need for relatively large administrative staffs to recruit, select, and train replacements. Because turnover has such a profound financial impact on organizations, a great deal of research on the prediction of voluntary turnover has been conducted in the past two decades.

In preparing this report, applied psychology and education journals, technical reports, and convention proceedings were searched manually for studies of turnover. In addition, a computer search was completed using Personnel Decisions Research Institute's (PDRI's) data base. Approximately 150 articles and reports were initially identified. Due to the breadth of the turnover literature, it was necessary to limit the review to several major areas: models of turnover, demographic variables, psychological variables, and work-related variables. Emphasis was given to studies of college and military training attrition. The choice of these areas was guided by the contents of past reviews of the turnover literature and by the strategy outlined in the project proposal.

The set of articles initially identified was subsequently reduced to the final 71 articles based on three criteria: (1) the study deals with voluntary turnover, (2) it presents or reviews empirical findings or discusses a model of the turnover process, and (3) it is relevant to at least one of the four areas listed above. Representative papers on model development and model testing and studies of demographic, psychological, and work-related variables are reviewed. All studies involving college attrition or military training attrition are included. These areas are emphasized because of their special relevance to Naval Reserve Officer Training Corps (NROTC) attrition issues.

Models of Turnover

For years, researchers focused on the link between job attitudes and employee turnover. Satisfaction with the job, for example, was widely thought to directly influence decisions to leave a job (e.g., Locke, 1976). However, correlations between job dissatisfaction and turnover rarely exceeded .40. Accordingly, attention turned to other ways to predict turnover and to understand the turnover or job withdrawal process.

This motivation to better predict and understand turnover led to model development efforts intended to explain the turnover process. Mobley and his colleagues (Mobley, 1977; Mobley, Griffeth, Hand, & Meglino, 1979) have been especially active and influential in positing and testing models of employee turnover. The main contribution of this work is the notion that satisfaction and other job attitudes do not influence turnover directly, but instead indirectly through withdrawal cognitions such as intent to leave the job or intentions to search for another job. A consistent finding in Mobley's and others' research on turnover is that these intentions are more highly correlated with turnover than job attitudes and that attitudes are more highly correlated with intentions than with the turnover act itself. Thus, hierarchical regression and path analytic tests of models of these variables conclude that job attitudes affect turnover through their influence on cognitions.

Work on model development and testing in this arena has led to other hypotheses and empirical findings as well. For example, Steers and Mowday (1981) posit that individual characteristics such as personality, job expectations and values, and alternative job

opportunities all influence job attitudes. Arnold and Feldman (1982) include in their model tenure and perceived job security as predictors of turnover, in addition to intentions to search for alternatives. Finally, several models explicitly identify organizational commitment, along with job satisfaction, as influencing withdrawal cognitions.

Arnold, H. J., & Feldman, D. C. (1982). A multivariate analysis of the determinants of job turnover. Journal of Applied Psychology, 67, 350-360.

This study investigated determinants of employee turnover with a sample of 654 accountants in Canada. Results are somewhat different from the typical Mobley model findings. First age, job satisfaction, and organizational commitment were found to influence the cognitive variable, intention to search for alternatives (considerably more strongly than the intention to leave variable). The intention to search variable, along with tenure and perceived job security, in turn was found to influence turnover directly.

Bluedorn, A. C. (1979). Structure, environment, and satisfaction: Toward a causal model of turnover from military organizations. Journal of Political and Military Sociology, 7, 181-207.

A model of turnover was tested on a stratified random sample of U.S. Army officers (N = 6156). Path analysis was employed to assess the direct effects on turnover intentions of: (1) pay, (2) perceived organizational control, (3) environmental push (perception of how negative the sanctions would have been had they not joined the Army), and (4) environmental pull (attractiveness of opportunities outside the Army) and the indirect effects of these variables on turnover intentions through job satisfaction. Responses to a questionnaire measuring all of these variables were analyzed, and results showed that pay and the other three exogenous variables did have substantial influence on turnover intentions indirectly through their effects on job satisfaction. Pay and environmental pull also had considerable direct effects on turnover intentions.

Horn, P. W., Griffeth, R. W., & Sellaro, C. L. (1984). The validity of Mobley's (1977) model of employee turnover. Organizational Behavior and Human Performance, 34, 141-174.

In this study, Mobley's model of turnover is again investigated, this time using survey data from 192 hospital employees. Efforts were made to measure some of the constructs more reliably than in the past and to include additional constructs of theoretical interest in the present work. For the most part, hierarchical regression and path analytic results supported the Mobley model of job attitudes relating directly to withdrawal cognitions and less directly to turnover, whereas these cognitions influence turnover directly. One difference in these results was that intentions to search for alternative job opportunities relate more strongly to turnover than to intentions to leave. An argument made is that in some employment situations, workers may decide to quit before considering and searching for other jobs. Also, the variable measuring perceived social pressure to quit on the part of significant others contributed little explanatory power in the model tested.

Miller, H., Katerberg, R., & Hulin, C. (1979). Evaluation of the Mobley, Horner, and Hollingsworth model of employee turnover. Journal of Applied Psychology, 64, 509-517.

This study tested the validity of a simplified version of the Mobley et al. turnover model with two samples of National Guard troops (Ns = 235 and 225). Three predictor constructs were formed: career mobility (age, tenure, and perceived chances of obtaining

another job); withdrawal cognitions (thinking of quitting and intentions to search for another job and to quit the National Guard); and job satisfaction. Cross-validated hierarchical regression results against actual turnover indicated that withdrawal cognitions influence turnover decisions directly and that career mobility and job satisfaction affect decisions to leave or stay only indirectly through their influence on withdrawal cognitions. These results largely confirm the Mobley, et al. model.

Mobley, W. H. (1977). Intermediate linkages in the relationship between job satisfaction and employee turnover. Journal of Applied Psychology, 62, 237-240.

Mobley suggests going beyond the replication of job satisfaction-turnover relationship results to study the psychology of the turnover process. A heuristic model is presented that is cognitive in nature and also sequential in that specific steps in the hypothesized thought process are articulated. These steps include (1) an evaluation of expected utility of search and costs of quitting, (2) intention to search for alternative employment, (3) evaluation of alternatives, and (4) comparison of alternatives to present job. He suggests these intermediate steps between experienced job dissatisfaction and turnover are potentially important and study of these steps should lead to increased understanding of the turnover process.

Steers, R. M., & Mowday, R. T. (1981). Employee turnover and post-decision accommodation processes. In L. L. Cummings, and B. M. Staw (Eds.), Research in organizational behavior (Vol. 3). Greenwich, CT: JAI Press.

The authors offer a model of employee turnover integrating earlier model development efforts and emphasizing some new variables to be considered in this context. Thus, in the model, negative job attitudes are hypothesized to influence intent to leave a job (as in other models), but expectations and values, alternative job opportunities, and even job performance are identified as potentially impacting on job attitudes. Non-work influences (e.g., family) are also recognized as affecting the desire of intent to turnover. Finally, the model acknowledges that job attitudes important in turnover research may include not only job satisfaction, but also organizational commitment.

Demographic Variables

Demographic variables have been studied frequently as correlates of voluntary turnover. Such variables include age, race, gender, family responsibilities, education, and tenure. Research consistently finds a negative correlation between age and turnover. Across a variety of organizations and jobs, younger people are more likely to attrite than are older people. The amount of variance explained by age is typically small, however.

Past reviews of the turnover literature do not include racial group membership as a turnover correlate. Although many studies describe the racial mix of the sample, few report results separately by race, or include race in correlation or regression analyses. The results of two studies that examine race effects on turnover are inconsistent. LaRocco, Pugh, and Gunderson (1977) found that black Navy enlistees were more likely to reenlist when eligible than were white enlistees. Race was unrelated to turnover in a sample of blue collar workers (Wanous, Stumpf, & Bedrosian, 1979).

The most frequent finding in the literature regarding the gender-turnover relationship is that men and women have similar rates of attrition. When a difference in attrition rates are found, however, women tend to have higher rates than men. This research is

confounded by the exclusion of pregnancy- or married-related turnover from some samples.

Family responsibility has been operationalized as marital status, number of dependents, or a composite of several such items. The majority of studies have found no relationship between marital status and turnover. When a relationship is found, singles tend to have higher turnover rates than married individuals. Number of dependents is generally negatively related to turnover. In general, composite measures of family responsibility are positively correlated with turnover.

Research on the relationship between education and turnover is inconclusive. The most common finding is no difference in the education level of attrites and stayers. When a difference is found, attrites tend to have more education than stayers. The samples utilized typically have a narrow range of education; range restriction is most severe when selection is based in part on completion of a degree or certification program. According to Mobley et al. (1979), lack of variance in education precludes the examination of the education-turnover relationship.

A consistent negative relationship between tenure on present job and turnover is found in the studies reviewed. The longer an individual has been employed with an organization, the lower the likelihood that the individual will voluntarily attrite. There is some evidence that tenure on a previous job may be useful as a predictor of tenure on the present job (Porter & Steers, 1973).

The value of demographic variables as selection or screening devices is limited by legal, ethical, and practical concerns. For example, in many circumstances it is not possible or desirable to select only older applicants, although their attrition rate is much lower than that of younger applicants. Potential use of demographic variables lies instead in identification of those groups at high risk for attriting. Interventions could be implemented to increase the likelihood of retaining individuals in high-risk groups. In this way, efforts to decrease attrition could be focused on those groups of employees or trainees contributing disproportionately to the turnover problem.

Age

Bluedorn, A. C. (1982). A unified model of turnover from organizations. Human Relations, 35 135-154.

Questionnaires were administered to 141 employees in the operational division of a large insurance company. Age was negatively correlated with turnover. When included in a path analysis, age had a significant effect on the prediction of turnover.

Cotton, J. L., & Tuttle, J. M. (1986). Employee turnover: A meta-analysis and review with implications for research. Academy of Management Review, 11, 55-70.

Of 45 studies reviewed, 27 reported a negative correlation between age and turnover. In addition to a simple count, this meta-analysis employed the method of summing z-scores. This method provides more precise effect size estimates than can be gained by simply computing the percentage of significant results. The latter counting method gives essentially the same credit to barely significant and highly significant findings. With the z method the significance level of each correlation is converted to a z-score, and these scores are summed across studies and then divided by the square root of the number of correlations reviewed. The resultant z value can be compared to a standardized normal

distribution (i.e., mean of zero and standard deviation of one). A z of 8.12 was found for the age-turnover relationship in this research. Based on this value, the authors conclude that there is strong evidence of a negative correlation between age and turnover.

Ley, R. (1966). Labor turnover as a function of worker differences, work environment, and authoritarianism of foremen. Journal of Applied Psychology, 50, 497-500.

A sample of 100 unskilled male production workers who terminated employment within 1 year of hire was compared to a sample of 100 workers who remained employed with the company for more than 1 year. Employment records revealed that the turnover group was younger at the time of hire than the stayer group (26.33 versus 29.89 years of age).

Miller, H., Katerberg, R., & Hulin, C. (1979). Evaluation of the Mobley, Horner, and Hollingsworth model of employee turnover. Journal of Applied Psychology, 64, 509-519.

Surveys were completed by samples of 235 and 225 National Guard members nearing completion of duty. Reenlistment information was gathered from personnel records 6 months after survey administration. Age was positively correlated with reenlistment in both samples.

Mobley, W. H., Griffeth, R. W., Hand, H. H., & Meglino, B. M. (1979). Review and conceptual analysis of the employee turnover process. Psychological Bulletin, 86, 493-522.

Six of seven studies reviewed reported a negative correlation between age and turnover. Age was unrelated to turnover in one study. The authors note that the amount of variance explained by age is consistently less than seven percent.

Muchinsky, P. M., & Tuttle, M. L. (1979). Employee turnover: An empirical and methodological assessment. Journal of Vocational Behavior, 14, 43-77.

Of 13 studies dealing with the age-turnover relationship, 11 found age to be negatively related to turnover, with young employees having the highest turnover rate.

Porter, L. W., & Steers, R. M. (1973). Organizational, work, and personal factors in employee turnover and absenteeism. Psychological Bulletin, 80, 151-176.

Turnover and age were negatively correlated in nine studies reviewed. One study of male office workers reported no correlation between age and turnover. Age was positively related to turnover in a study of public service trainees.

Race

LaRocco, J. M., Pugh, W. M., & Gunderson, K. E. (1977). Identifying determinants of retention decisions. Personnel Psychology, 30, 199-215.

A total of 1270 male first-term Navy enlistees were administered a battery of questionnaires. The sample was split into an analysis sample ($N = 642$) and a cross-validation sample ($N = 628$). Blacks were more likely than whites to reenlist.

Wanous, J. P., Stumpf, S. A., & Bedrosian, H. (1979). Job survival of new employees. Personnel Psychology, 32, 651-662.

A battery of surveys was completed by 1736 blue collar workers. The subjects were split into a validation sample (N = 1170) and a replication sample (N = 566). Job survival status was defined as follows: (1) 1 week or less, (2) between 1 week and 1 month, (3) between 1 and 7 months, and (4) more than 7 months. Race was uncorrelated with voluntary and involuntary turnover in both samples.

Gender

Arnold, H. J., & Feldman, D. C. (1982). A multivariate analysis of the determinants of job turnover. Journal of Applied Psychology, 67, 350-360.

Canadian Chartered Accountants (N = 654) were administered an extensive survey. Attrition data were gathered 1 year later. Women had higher turnover than men.

Cotton, J. L., & Tuttle, J. M. (1986). Employee turnover: A meta-analysis and review with implications for research. Academy of Management Review, 11, 55-70.

Eleven of 20 studies reviewed reported no gender difference in turnover rates. Of the remaining studies, eight found turnover rates to be higher for women than men, and one found men had higher turnover than women. Based on a z of 3.74, the authors conclude with "strong confidence" that turnover is higher for women than men.

Mobley, W. H., Griffeth, R. W., Hand, H. H., & Meglino, B. M. (1979). Review and conceptual analysis of the employee turnover process. Psychological Bulletin, 86, 493-522.

The authors reviewed two studies that examined the gender-turnover relationship. One study of Japanese electrical company employees found higher turnover for women than men. A second study of a diverse occupational sample found no relationship between turnover and gender.

Parasuraman, S. (1982). Predicting turnover intentions and turnover behavior: A multivariate analysis. Journal of Vocational Behavior, 21, 111-121.

A sample of 160 skilled and low-skilled production workers, 35 percent female, completed a battery of tests. Turnover data were collected from company records 1 year after survey administration. Gender was unrelated to turnover.

Werbel, J. D., & Gould, S. (1984). A comparison of the relationship of commitment to turnover in recent hires and tenured employees. Journal of Applied Psychology, 69, 687-690.

Surveys were completed by 173 female and 36 male registered nurses from six hospitals. Attrition data were gathered from company records 9 months after survey administration. The attrition rate for males and females did not differ.

Family Responsibilities

Arnold, H. J., & Feldman, D. C. (1982). A multivariate analysis of the determinants of job turnover. Journal of Applied Psychology, 67, 350-360.

Surveys were completed by 654 Canadian Chartered Accountants. Turnover data were collected 1 year later. Turnover was higher for single individuals and was negatively correlated with number of dependents.

Cotton, J. L., & Tuttle, J. M. (1986). Employee turnover: A meta-analysis and review with implications for research. Academy of Management Review, 11 55-70.

A negative correlation between number of dependents and turnover was reported in 9 of 17 studies. In 14 of 20 studies, marital status was unrelated to turnover. The authors conclude that there is strong evidence of a negative correlation between number of dependents and turnover ($z = 4.12$) and weak evidence of lower turnover among married individuals ($z = 2.52$).

Hom, P. W., Katerberg, R., & Hulin, C. L. (1979). Comparative examination of three approaches to the prediction of turnover. Journal of Applied Psychology, 64, 280-290.

Surveys were completed by 484 National Guard members. Within 6 months of survey administration, 252 members had made reenlistment decisions. Marital status was unrelated to reenlistment in this group. Number of dependents was positively related to reenlistment.

Mobley, W. H., Griffeth, R. W., Hand, H. H., & Meglino, B. M. (1979). Review and conceptual analysis of the employee turnover process. Psychological Bulletin, 86, 493-522.

Four studies that measured family responsibilities were reviewed. The authors conclude that the relationship between family responsibilities and turnover is unclear. Marital status was unrelated to turnover in a study of clerical workers; unmarried individuals had higher turnover in a sample of diverse occupational groups. A study of Japanese electrical workers found a negative relationship between number of dependents and turnover. A composite measure of family responsibility, consisting of number of children, marital status, age, and age of youngest child, was negatively related to turnover in a sample of female credit union employees.

Muchinsky, P. M., & Tuttle, M. L. (1979). Employee turnover: An empirical and methodological assessment. Journal of Vocational Behavior, 14, 43-77.

No consistent pattern of results was found for family size and turnover. Two studies, one of males and one of females, reported a negative correlation between family size and turnover; a third study reported a positive correlation. Composite measures of family responsibility were positively correlated with turnover in seven of seven studies.

Porter, L. W., & Steers, R. M. (1973). Organizational, work, and personal factors in employee turnover and absenteeism. Psychological Bulletin, 80, 151-176.

The relationship between family size and turnover is unclear. One study reported a positive correlation between number of dependents and turnover for female physical therapists. A second study reported a negative correlation between number of dependents

and turnover for male factory workers. When composite measures of family responsibility are utilized, the results are more consistent. All five studies using such measures found positive correlations between family responsibilities and turnover. It has been suggested that workers view the demands of employment as a possible threat to the stability of their family life. This threat increases as family responsibilities increase, resulting in increased turnover.

Singer, A., & Morton, A. S. (1969). A study of enlisted Navy retention. Personnel Psychology, 22, 19-31.

The researchers examined personnel files of all active duty regular Navy men eligible and recommended for reenlistment in an 11 month period. All subjects had been on active duty less than 21 years. The reenlistee group consisted of 38,962 men who reenlisted within 3 months of separation. The loss group consisted of 43,666 men who did not reenlist within 3 months of separation. Reenlistment rate increased as the number of dependents increased. Only 20 percent of single first-termers reenlisted, compared to 75 percent of first-termers with four children.

Education

Cotton, J. L., & Tuttle, J. M. (1986). Employee turnover: A meta-analysis and review with implications for research. Academy of Management Review, 11, 55-70.

A positive correlation between years of education and turnover was found in 12 of 37 studies reviewed. Based on a z of 3.90, the authors conclude with strong confidence that education level is positively related to turnover.

Hom, P. W., & Hulin, C. L. (1981). A competitive test of prediction of reenlistment by several models. Journal of Applied Psychology, 66, 23-29.

Surveys were administered to National Guard members from 29 units. Of the respondents, 255 made reenlistment decisions within 9 months of initial data collection. Level of education was negatively correlated with reenlistment.

Mobley, W. H., Griffeth, R. W., Hand, H. H., & Meglino, B. M. (1979). Review and conceptual analysis of the employee turnover process. Psychological Bulletin, 86, 493-522.

Based on a review of the literature, the authors conclude that lack of variance in educational level in the studies reviewed precludes evaluation of the education-turnover relationship.

Mowday, R. T., Porter, L. W., & Stone, E. F. (1978). Employee characteristics as predictors of turnover among female clerical employees in two organizations. Journal of Vocational Behavior, 12, 321-332.

Female clerical workers ($N = 314$) completed demographic and personality questionnaires. Turnover was assessed 8 months after survey administration. The education level of stayers and attrites did not differ.

Parasuraman, S. (1982). Predicting turnover intentions and turnover behavior: A multivariate analysis. Journal of Vocational Behavior, 21, 111-121.

A survey of demographic characteristics was administered as part of a larger test battery of 160 skilled and low-skilled production workers. Attrition data were obtained 1 year later. Level of education was unrelated to turnover.

Tenure

Cotton, J. L., & Tuttle, J. M. (1986). Employee turnover: A meta-analysis and review with implications for research. Academy of Management Review, 11, 55-70.

Of 22 studies reviewed, 15 reported a negative correlation between tenure and turnover. The authors conclude with strong confidence that tenure is negatively related to turnover ($z = 7.17$).

Michaels, C. E., & Spector, P. E. (1982). Causes of employee turnover: A test of the Mobley, Griffeth, Hand, and Meglino model. Journal of Applied Psychology, 67, 53-59.

A battery of questionnaires was administered to 112 mental health workers. Turnover data were obtained from personnel records 6 months after survey administration. Job tenure and turnover were unrelated.

Mobley, W. H., Griffeth, R. W., Hand, H. H., & Meglino, B. M. (1979). Review and conceptual analysis of the employee turnover process. Psychological Bulletin, 86, 493-522.

The three studies reviewed assessed the relationship between tenure and turnover. All three studies found that tenure was negatively related to turnover.

Mobley, W. H., Horner, S. O., & Hollingsworth, A. T. (1978). An evaluation of precursors of hospital turnover. Journal of Applied Psychology, 63, 408-414.

A battery of questionnaires was administered to 203 full-time hospital employees. Data on voluntary turnover were obtained 47 weeks later. A negative correlation between tenure and turnover was found.

Muchinsky, P. M., & Tuttle, M. L. (1979). Employee turnover: An empirical and methodological assessment. Journal of Vocational Behavior, 14, 43-77.

Six studies were reviewed that examined the relationship between tenure and turnover. All six studies reported that tenure was negatively related to turnover.

Porter, L. W., & Steers, R. M. (1973). Organizational, work, and personal factors in employee turnover and absenteeism. Psychological Bulletin, 80, 151-176.

Four studies that assessed the tenure-turnover relationship were reviewed. Three of the studies reported a negative correlation between turnover and length of service with an organization. One study reported that length of service on a previous job was negatively related to length of service on the present job.

Taylor, K. E., & Weiss, D. J. (1972). Prediction of individual job termination from measured job satisfaction and biographical data. Journal of Vocational Behavior, 2, 123-132.

Surveys were completed by 475 employees in a discount chain store. Individuals who terminated employment within 1 year of survey administration had lower tenure than those who remained with the company.

Werbel, J. D., & Gould, S. (1984). A comparison of the relationship of commitment to turnover in recent hires and tenured employees. Journal of Applied Psychology, 69, 687-690.

Surveys were completed by 173 female and 36 male registered nurses from six hospitals. Attrition data were gathered from company records 9 months after survey administration. Tenure was negatively correlated with turnover.

Psychological Variables

Psychological correlates of voluntary turnover have been investigated extensively. Variables studied include ability, personality, vocational interests, biographical information, job satisfaction, and organizational commitment. It is generally accepted that these variables contribute to individual differences in work behaviors. Based on the individual differences literature, researchers have hypothesized that psychological variables would also be related to voluntary turnover behavior. With the exception of ability, moderate to strong relationships between these psychological variables and voluntary turnover have been found. The use of certain psychological variables to identify applicants likely to attrite is promising.

No consistent relationship between ability and turnover emerges from the literature. Contributing to the inconsistency is the variety of ability indices used: grade point average, intelligence tests, aptitude tests, and achievement tests. While these indices tend to be correlated substantially, each seems related to turnover in a somewhat different way.

In general, some relationship between personality scales and turnover is reported. Because a variety of personality measures have been utilized, it is difficult to draw any specific conclusions regarding the personality of attrites versus stayers.

There is some evidence that similarity between an individual's vocational interests and his/her job requirements is associated with low turnover (Porter & Steers, 1973). In general, some subset of interest scale items have been found to differentiate attrites from stayers in a variety of samples. However, empirically weighted item subsets may not hold up well under cross-validation (Muchinsky & Tuttle, 1979).

Research consistently finds that biographical information is related to turnover. Schuh (1967) notes, however, that these predictor-turnover relationships tend to diminish over time. Cross-validation of discriminating item sets is therefore crucial. Due to the variety of samples and items utilized, no general description of the background of attrites is possible.

A negative relationship between overall job satisfaction and turnover is consistently reported in the literature. This relationship holds across organizations, samples, and jobs.

Satisfaction with the work itself also displays a consistent negative relationship with turnover. Satisfaction with pay, promotion, co-workers, and supervision tends to be negatively related to turnover, although findings of no relationship here are also common. The job satisfaction-turnover relationship tends to strengthen the closer in time the measurement is to the act of attriting.

The majority of the evidence regarding the organizational commitment-turnover relationship indicates that commitment is negatively related to turnover. Path analyses suggest that commitment influences turnover indirectly through its relationship with intention to quit. As with job satisfaction, the organizational commitment-turnover relationship is stronger the closer in time the measurement is to the turnover act.

Ability

Cotton, J. L., & Tuttle, J. M. (1986). Employee turnover: A meta-analysis and review with implications for research. Academy of Management Review, 11, 55-70.

Three of five studies reported a relationship between aptitude or ability and turnover. Two of six studies reported a positive relationship between intelligence and turnover. The authors conclude that there is no evidence of a relationship between intelligence and turnover ($z = 1.77$), and weak to moderate evidence of a relationship between aptitude/ability and turnover ($z = 3.01$). The authors offer no explanation of the distinction between intelligence and aptitude/ability.

Federico, S. M., Federico, P. A., & Lundquist, G. W. (1976). Predicting women's turnover as a function of extent of met salary expectations and biodemographic data. Personnel Psychology, 29, 559-566.

Pre-employment questionnaires were analyzed from 96 female credit union employees who voluntarily terminated employment. Grade point average in school was nonsignificantly related to the number of months spent on the job.

Muchinsky, P. M., & Tuttle, M. L. (1979). Employee turnover: An empirical and methodological assessment. Journal of Vocational Behavior, 14, 43-77.

No consistent pattern of results emerged from a review of the literature. Curvilinear, zero, and negative relationships between aptitude and turnover were reported.

Schuh, A. J. (1967). The predictability of employee turnover: A review of the literature. Personnel Psychology, 20, 133-152.

No systematic relationship between intelligence test scores or aptitude test scores and turnover was found in the literature reviewed. Of those studies that found some relationship, the results did not hold up under cross-validation.

Personality

Barton, K., & Cattell, R. B. (1972). Personality factors related to job promotion and turnover. Journal of Counseling Psychology, 19, 430-435.

The Sixteen Personality Factor Questionnaire (16PF) was administered to 309 graduating seniors. Subjects were retested 5 years later. Subjects who changed jobs

during the 5-year interval (N = 160) scored significantly higher in Imagination on both testing occasions than those who remained on the same job (N = 149). At the second testing only, the changed-jobs group scored significantly higher than the same-job group on scales measuring self-assurance and frustration, and significantly lower than the same-job group on self-discipline.

Ferris, G. R., Youngblood, S. A., & Yates, V. L. (1985). Personality, training performance, and withdrawal: A test of the person-group fit hypothesis for organizational newcomers. Journal of Vocational Behavior, 27, 377-388.

A group of 85 female flight attendants completed the Sixteen Personality Factor Questionnaire (16PF) upon employment. An index of group fit was calculated based on how well the individual's 16PF personality profile matched the average profile of a sample of "acceptable" performers. Attrition data were obtained 1 year after survey administration. Person-group fit was uncorrelated with turnover. Scores on four 16PF second-order factors--Extraversion, Anxiety, Corteria (tough mindedness), and Independence--were uncorrelated with turnover.

Mobley, W. H., Griffeth, R. W., Hand, H. H., & Meglino, B. M. (1979). Review and conceptual analysis of the employee turnover process. Psychological Bulletin, 86, 493-522.

Three of four studies reviewed found that higher need for achievement was associated with higher attrition. The fourth study found need for achievement associated with low turnover in a sample of entrepreneurs.

Mowday, R. T., Porter, L. W., & Stone, E. F. (1978). Employee characteristics as predictors of turnover among female clerical employees in two organizations. Journal of Vocational Behavior, 12, 321-332.

The Personality Research Form (PRF) was completed by 314 female clerical workers in a national insurance company. Turnover was assessed 8 months after administration of the PRF. Attrites exhibited significantly higher need for autonomy and lower need for harm avoidance than stayers.

Muchinsky, P. M., & Tuttle, M. L. (1979). Employee turnover: An empirical and methodological assessment. Journal of Vocational Behavior, 14, 43-77.

Ten of 14 studies reviewed found some correlation between personality and turnover. However, significant predictors were typically subsets of a much larger pool of predictors. The authors conclude that personality differences have a marginal impact on turnover.

Parasuraman, S. (1982). Predicting turnover intentions and turnover behavior: A multivariate analysis. Journal of Vocational Behavior, 21, 111-121.

A battery of tests was administered to 160 skilled and low-skilled production workers. Trait anxiety was measured with a scale adapted from the short form of the Taylor Manifest Anxiety Scale. Felt stress was measured using items from the Job-Related Tension Index and the Frequency of Perceived Job Pressure Index. Turnover data were obtained 1 year after survey administration. Anxiety and turnover were unrelated. A positive correlation was found between felt stress and turnover.

Vocational Interests

Muchinsky, P. M., & Tuttle, M. L. (1979). Employee turnover: An empirical and methodological assessment. Journal of Vocational Behavior, 14, 43-77.

A negative correlation between vocational interests-job requirements compatibility and turnover was reported in six of eight studies reviewed. In general, only a small subset of items or scales successfully discriminated between stayers and leavers. Results did not hold up under cross-validation in three studies; no other studies reported cross-validation. Of three studies utilizing the Strong Vocational Interest Blank, two found a negative correlation and one found no correlation between interests and turnover.

Norman, W. L. (1971). Determining characteristics of career military officers. Personnel Psychology, 24, 13-33.

Demographic and biographical data, personality, interest, and attitude measures were assembled into a 142 item questionnaire. A sample of active duty Army officers completed the questionnaire while attending a career training course. A sample of former officers who were currently in the reserves completed the same questionnaire while attending reserve training. All respondents had served a minimum of 2 years on active duty. Career officers were more likely than noncareer officers to report an interest in outdoor activities.

Porter, L. W., & Steers, R. M. (1973). Organizational, work, and personal factors in employee turnover and absenteeism. Psychological Bulletin, 80, 151-176.

Similarity between job and vocational interests was assessed in three studies reviewed. Two studies utilized the Strong Vocational Interest Blank; one study utilized Kuder Preference Record. All three studies report a negative correlation between turnover and job requirements-vocational interest compatibility.

Schuh, A. J. (1967). The predictability of employee tenure: A review of the literature. Personnel Psychology, 20, 133-152.

Nine studies were reviewed dealing with the vocational interest-turnover relationship. Three studies reported a relationship between the Persuasive scale on the Kuder Preference Record and length of service. A fourth study found a nonsignificant trend for this scale. In two studies, the Occupation Level scale of the Strong Vocational Interest Blank was related positively to turnover. The Lee Thorpe Occupational Interest Inventory was unrelated to turnover in a sample of male foremen. Two studies utilizing unidentified interest measures found an interest-turnover relationship.

Stone, T. H., & Athelstan, G. T. (1969). The SVIB for women and demographic variables in the prediction of occupational tenure. Journal of Applied Psychology, 53, 408-412.

State certification records were used to identify a sample of 198 occupational therapists (OT) and 255 physical therapists (PT). Each group was randomly split into two samples of equal size for double cross-validation. Subjects completed the Career Patterns Questionnaire and the women's Strong Vocational Interest Blank (SVIB). Occupational tenure was indexed by the total number of years professional work experience divided by the number of years since graduation from a professional program. Experimental Scale No. 2 of the SVIB (a scale used for research purposes) was related to tenure in both PT

samples. For OT and PT groups, demographic variables were better predictors of occupational tenure than were the SVIB scales.

Biographical Information

Cotton, J. L., & Tuttle, J. M. (1986). Employee turnover: A meta-analysis and review with implications for research. Academy of Management Review, 11, 55-70.

A relationship between biographical information and turnover was found in 10 of 13 studies. Based on a z of 4.85, the authors conclude that there is strong evidence of a biodata-turnover relationship.

Muchinsky, P. M., & Tuttle, M. L. (1979). Employee turnover: An empirical and methodological assessment. Journal of Vocational Behavior, 14, 43-77.

All 16 studies using biodata items reported that such items were useful in predicting turnover. The authors note that while the correlations reported are not large, most are relatively stable upon cross-validation.

Norman, W. L. (1971). Determining characteristics of career military officers. Personnel Psychology, 24, 13-33.

Demographic and biographical data, personality, interest, and attitude measures were assembled into a 142 item questionnaire. A sample of active duty Army officers and another sample of former officers who were currently in the reserves completed this questionnaire. Significant discrimination between the stayers and leavers was found for several biodata items. Those who chose to remain in the Army were more likely than those who left to hold Regular Army commissions, live in military housing, participate actively and willingly in the social side of military life, have spouses who participate actively in the social aspects of military life, have rural or suburban backgrounds, and have middle or upper middle income families.

Robinson, D. D. (1972). Prediction of clerical turnover in banks by means of a weighted application blank. Journal of Applied Psychology, 56, 282.

Application blanks of short tenure ($N = 100$) and long tenure ($N = 100$) clerical employees were analyzed to identify items that distinguished the two groups. Item weights were cross-validated. The weighted items correctly identified 80 percent of the short tenure employees at the expense of falsely rejecting 30 percent of the long tenure employees. Based on 27 items that differentiated the tenure groups, short tenure subjects were younger, had fewer family responsibilities, were better educated, and had held more jobs in the past several years than long tenure subjects.

Schuh, A. J. (1967). The predictability of employee tenure: A review of the literature. Personnel Psychology, 20, 133-152.

Biodata items were useful in predicting turnover in 19 of 21 studies reviewed. The predictability tends to decrease over replications.

Shott, G. I., Albright, L. E., & Glennon, J. R. (1963). Predicting turnover in an automated office situation. Personnel Psychology, 16, 213-219.

Thirty-four items from employee personnel files were combined with interest and aptitude items to form a weighted application blank. Long tenure (N = 275) individuals had been with the company at least 1 year; short tenure individuals (N = 286) stayed with the company less than 1 year. Clerical, stenographic, and machine operator positions were included. Separate analyses were performed on male and female subgroups. Nine items significantly discriminated long from short tenure groups for the females, seven for the males. For both males and females, the long tenure group was more likely than the short tenure group to have spent a minimum of 10 months with their previous employer, left their previous job for advancement, and resided in a specific area of the city. Compared to the short tenure group, long tenure men were likely to have served in the military; long tenure women were more often over 24 years of age at the time of application.

Job Satisfaction

Cotton, J. L., & Tuttle, J. M. (1986). Employee turnover: A meta-analysis and review with implications for research. Academy of Management Review, 11, 55-70.

Results of a meta-analysis indicate strong evidence of a negative relationship between turnover and (1) overall satisfaction ($z = 8.96$), (2) satisfaction with the work itself ($z = 5.59$), (3) satisfaction with pay ($z = 4.33$), and (4) satisfaction with supervision ($z = 4.10$). Moderate evidence was found for negative relationships between turnover and two satisfaction variables, co-workers, and promotion, based on additional analyses.

Mobley, W. H., Griffeth, R. W., Hand, H. H., & Meglino, B. M. (1979). Review and conceptual analysis of the employee turnover process. Psychological Bulletin, 86, 493-522.

The authors conclude after reviewing the literature that overall satisfaction is negatively related to turnover, although the amount of variance accounted for is consistently less than 14 percent. In six of nine studies, satisfaction with the work itself was negatively related to turnover. Satisfaction with other specific areas of the job was not strongly related to turnover: Five of seven studies reported no relationship between satisfaction with pay and turnover; five of six studies reported no relationship between satisfaction with promotion and turnover; four of six studies reported no relationship between satisfaction with supervision and turnover; and five of six studies reported no relationship between satisfaction with co-workers and turnover.

Mobley, W. H., Horner, S. O., & Hollingsworth, A. T. (1978). An evaluation of precursors of hospital turnover. Journal of Applied Psychology, 63, 408-414.

A sample of 203 full-time hospital employees was administered a battery of questionnaires assessing job attitudes, perceptions, and goals. Overall satisfaction was measured with the Index of Job Satisfaction (IJS). The Job Descriptive Index (JDI) was used to measure satisfaction with job facets. Voluntary attrition data were obtained 47 weeks later. Attrition was negatively correlated with overall satisfaction and satisfaction with the work itself. Based on multiple regression analyses, the authors suggest that satisfaction influences attrition indirectly through its influence on intentions and thinking of quitting.

Muchinsky, P. M., & Tuttle, M. L. (1979). Employee turnover: An empirical and methodological assessment. Journal of Vocational Behavior, 14, 43-77.

The authors conclude from reviewing the literature that overall job satisfaction is negatively related to turnover. This finding is consistent across samples, instruments, and study designs. A negative relationship with turnover was also found for satisfaction with the work itself, supervision, pay, peers, and the military.

Newman, J. E. (1974). Predicting absenteeism and turnover: A field comparison of Fishbein's model and traditional job attitude measures. Journal of Applied Psychology, 59, 610-615.

The Job Descriptive Index (JDI) and the Kunin Faces Scale, a measure of overall job satisfaction, were administered to 108 employees of a county nursing home. Attrition data were gathered from personnel records 2 months later. A negative correlation was found between the Kunin Faces score and attrition. No significant correlations were found between the JDI subscales and attrition.

Porter, L. W., & Steers, R. M. (1973). Organizational, work, and personal factors in employee turnover and absenteeism. Psychological Bulletin, 80, 151-176.

Of 15 studies reviewed, 14 indicated a negative relationship between overall job satisfaction and turnover. Satisfaction with pay and promotion, peers, supervision, and job content were each negatively correlated with turnover in a majority of the studies.

Schuh, A. J. (1967). The predictability of employee tenure: A review of the literature. Personnel Psychology, 20, 133-152.

Job satisfaction was negatively related to turnover in seven of seven studies. Schuh suggests that job satisfaction may be a stable individual characteristics, and could thus be measured prior to employment.

Waters, L. K., Roach, D., & Waters, C. W. (1976). Estimates of future tenure, satisfaction, and biographical variables as predictors of termination. Personnel Psychology, 29, 57-60.

A job attitude questionnaire was administered to a sample of 105 nonsupervisory female clerical workers. Satisfaction was measured with the Job Descriptive Index (JDI). Turnover data were obtained from company records 2 years after survey administration. Satisfaction with the work itself was negatively correlated with turnover. The JDI pay, promotion, supervision, and co-workers scales were unrelated to turnover.

Organizational Commitment

Bluedorn, A. C. (1982). A unified model of turnover from organizations. Human Relations, 35, 135-154.

Questionnaires were administered to 141 employees of a large insurance company. Turnover data were gathered every month for at least 10 months after survey administration. The correlation between organizational commitment and turnover was nonsignificant. Results of a path analysis indicate that organizational commitment influences turnover indirectly through its influence on intentions to leave.

Cotton, J. L., & Tuttle, J. M. (1986). Employee turnover: A meta-analysis and review with implications for research. Academy of Management Review, 11, 55-70.

A negative relationship between turnover and commitment was found in 14 of 16 studies reviewed. The authors conclude that there is strong evidence of a negative correlation between organizational commitment and turnover ($z = 7.39$).

Farrell, D., & Rusbult, C. E. (1981). Exchange variables as predictors of job satisfaction, job commitment, and turnover: The impact of rewards, costs, alternatives, and investments. Organizational Behavior and Human Performance, 28, 78-95.

Students in an introductory business course ($N = 128$) were trained for and completed a written task, and then were presented with a description of a second task. After reading the description, subjects were given a questionnaire. Three items in the questionnaire were designed to measure task commitment. Desire to switch to the second task was used as a measure of turnover. Commitment to the task was negatively related to turnover.

Michaels, C. E., & Spector, P. E. (1982). Causes of employee turnover: A test of the Mobley, Griffeth, Hand, and Meglino model. Journal of Applied Psychology, 67, 53-59.

A sample of 112 mental health workers completed the Organizational Commitment Questionnaire (OCQ) and a measure of intention to quit as part of an extensive battery of tests. Six months after survey administration, termination data were obtained from personnel records. A significant positive correlation between commitment and turnover was found, although the magnitude of the correlation was small. Results of a path analysis indicate that commitment influences turnover indirectly through its relationship with intention to quit.

Mobley, W. H., Griffeth, R. W., Hand, H. H., & Meglino, B. M. (1979). Review and conceptual analysis of the employee turnover process. Psychological Bulletin, 86, 493-522.

Four studies reviewed found a negative correlation between commitment and turnover. Two variables similar to commitment--job involvement and job attachment--were negatively related to turnover in a single study each. The authors conclude that commitment and attachment appear to be more strongly related to turnover than is satisfaction.

Mowday, R. T., Koberg, C. S., & McArthur, A. W. (1984). The psychology of the withdrawal process: A cross-validated test of Mobley's intermediate linkages model of turnover in two samples. Academy of Management Journal, 27, 79-94.

Organizational commitment was assessed in a sample of 569 hospital and clerical workers. Turnover data were obtained 1 year following survey administration. Commitment was unrelated to turnover in the clerical sample, but was negatively related to turnover in the hospital sample. Further analyses suggest that commitment indirectly impacted turnover through its influence on withdrawal cognitions.

Mowday, R. T., Steers, R. M., & Porter, L. W. (1979). The measurement of organizational commitment. Journal of Vocational Behavior, 14, 224-247.

A total of 2563 employees from nine diverse organizations were administered the Organizational Commitment Questionnaire (OCQ) in a validation study. A consistent pattern of moderate negative correlations between commitment and turnover was found.

Porter, L. W., Steers, R. M., Mowday, R. T., & Boulian, P. V. (1974). Organizational commitment, job satisfaction, and turnover among psychiatric technicians. Journal of Applied Psychology, 59, 603-609.

Psychiatric technician trainees (N = 60) were administered measures of organizational commitment and satisfaction on four occasions: ten weeks prior to completion of training, 2 weeks prior to completion of training, 2 weeks after completion of training, and 6 weeks after completion of training. Attrition data were obtained 8 months after the last testing occasion. Organizational commitment was the most important variable in discriminating stayers from attrites. Stayers had higher mean scores on commitment than attrites. This relationship became stronger over time.

Work-Related Variables

Although work-related variables are not useful for personnel selection, the relationship between such variables and turnover may suggest changes in the organization or job which could lead to reduced turnover rates. Two widely researched work-related variables are job content and supervisor characteristics.

Several aspects of job content have been investigated. Evidence indicates that task repetitiveness, work unit size, and situational constraints are positively related to turnover. Work role clarity, autonomy, and motivating potential have also been found to be negatively related to turnover. These results suggest that challenging jobs with small work groups and clear work roles lead to lower turnover.

A variety of supervisor characteristics in relation to turnover have been examined. In general, findings indicate that high supervisor acceptance, consideration, and recognition lead to low turnover. Authoritative supervision tends to be related to high turnover. In their review, Porter and Steers (1973) found a negative correlation between turnover and supervisor's experience. These findings suggest that an experienced supervisor with good human relations skills should have low turnover among subordinates. It is likely, however, that job content and supervisor characteristics interact in a complex fashion. For example, in highly complex tasks subordinates may prefer a supervisor who provides structure.

Job Content

Cotton J. L., & Tuttle, J. M. (1986). Employee turnover: A meta-analysis and review with implications for research. Academy of Management Review, 11, 55-70.

Task repetitiveness was positively related to turnover in three of five studies. Role clarity was negatively related to turnover in three of three studies. The authors conclude that the evidence of a positive relationship between task repetitiveness and turnover is weak ($z = 2.53$), while evidence is moderate for a negative role clarity-turnover relationship ($z = 3.64$).

Dittrich, J. E., & Carrell, M. R. (1979). Organizational equity perceptions, employee job satisfaction, and departmental absence and turnover rates. Organizational Behavior and Human Performance, 24, 29-40.

A sample of 158 clerical employees completed the Organizational Fairness Questionnaire in order to assess their perceptions of organizational equity. Attrition data were gathered 11 months after survey administration. Equity perceptions were unrelated to turnover.

Mobley, W. H., Griffeth, R. W., Hand, H. H., & Meglino, B. M. (1979). Review and conceptual analysis of the employee turnover process. Psychological Bulletin, 86, 493-522.

Research on a variety of job content variables suggests a negative relationship between several of these variables and turnover. Amount of work was unrelated to turnover in a sample of salesmen. Job autonomy had a small negative correlation with turnover among Japanese workers. Perceived intrinsic motivation was negatively related to turnover in a sample of bank tellers. Self-perception of task-relevant abilities was negatively related to turnover in a study of auto workers.

Mowday, R. T., & Spencer, D. G. (1981). The influence of task and personality characteristics on employee turnover and absenteeism incidents. Academy of Management Journal, 24, 634-642.

Perceived task characteristics were assessed with a 14-item version of the Job Diagnostic Survey (JDS) in a sample of 569 state and county government employees. Turnover and absenteeism data were gathered from employee records 1 year after survey administration. Turnover was negatively related to the motivating potential score of the job.

Muchinsky, P. M., & Tuttle, M. L. (1979). Employee turnover: An empirical and methodological assessment. Journal of Vocational Behavior, 14, 43-77.

A variety of work-related variables were examined as possible correlates of turnover. Four of five studies reviewed reported a positive relationship between task repetitiveness and turnover. Work unit size was positively related to turnover in three of four studies. Job autonomy was negatively related to turnover in five of five studies.

O'Connor, E. J., Peters, L. H., Pooyan, A., Weekley, J., Frank, B., & Erenkrantz, B. (1984). Situational constraint effects on performance, affective reaction, and turnover: A field replication and extension. Journal of Applied Psychology, 69, 663-672.

Perceived situational constraints were measured in a sample of 1450 convenience store managers as part of a large validation study. Attrition data were gathered from company records 18 months after survey administration. Turnover was positively related to perceived constraint at all managerial levels. The percent of variance in turnover accounted for by situational constraints was small, however.

Porter, L. W., & Steers, R. M. (1973). Organizational, work, and personal factors in employee turnover and absenteeism. Psychological Bulletin, 80, 151-176.

Work unit size was positively related to turnover in three of four studies reviewed. Task repetitiveness was positively related to turnover in four of five studies. In four

studies, job autonomy was negatively related to turnover. Role clarity was negatively related to turnover in four studies. The authors conclude that job content factors are highly related to turnover.

Proctor, J.H., Lassiter, W. E., & Soyars, W. B., III. (1976). Prediction of young U.S naval officer retention. Personnel Psychology, 29, 567-581.

Questionnaires were completed by 1238 men near completion of their first tour of duty as naval officers. The Organizational Climate Audit (OCA) measured five factors of the organizational climate: (1) upward influence-downward involvement, (2) mutual support, (3) encouragement of initiatives, (4) organization image, and (5) rewards and recognition. The shape of the five-factor score profiles was similar for those who reenlisted (stayers) and those who resigned after completion of tour (leavers). Leavers had lower mean OCA total scores, and lower means on each of the five factors.

Supervisor Characteristics

Ferris, G. R. (1985). Role of leadership in the employee withdrawal process: A constructive replication. Journal of Applied Psychology, 70, 777-781.

A total of 68 female registered nurses and 18 units and two shifts of a midwestern hospital completed a battery of surveys. Quality of supervisor-subordinate interactions and attitudes toward several job facets were measured. Turnover data were obtained 1 year after survey administration; nine nurses had attrited. Quality of supervisor-subordinate interactions was negatively correlated with turnover. Leadership style, indexed by the mean of all subordinates' ratings of the quality of interactions, was not related to turnover.

Graen, G., & Ginsburgh, S. (1977). Job resignation as a function of role orientation and leader acceptance: A longitudinal investigation of organization assimilation. Organizational Behavior and Human Performance, 19, 1-17.

Questionnaires were completed by 67 female and 22 male university service department employees. Variables assessed included demographic characteristics, leadership treatment, role orientation, and satisfaction. Attrition data were gathered 18 months later. Leader acceptance (LA) was negatively related to turnover. The interaction between role orientation (RO) and LA was significant: The group of individuals low on both LA and RO had an 80 percent turnover rate, while the low LA-high RO and high LA-low RO groups had turnover rates near 30 percent.

Mobley, W. H., Griffeth, R. W., Hand, H. H., & Meglino, B. M. (1979). Review and conceptual analysis of the employee turnover process. Psychological Bulletin, 86, 493-522.

Leader acceptance was negatively related to turnover in two of two studies. The authors suggest a need for more detailed studies of leader-member exchange and a closer examination of leadership variables.

Muchinsky, P. M., & Tuttle, M. L. (1979). Employee turnover: An empirical and methodological assessment. Journal of Vocational Behavior, 14, 43-77.

Studies reviewed indicate turnover is positively related to task-oriented and authoritarian leader styles and negatively related to leaders' consideration and human-relations ability. Two studies found a negative relationship between turnover and leader

consideration, and a positive relationship between turnover and initiation of structure. One study found a positive relationship between turnover and leader's technical ability and a negative relationship between turnover and leader's human-relations ability. One study found a positive relationship between turnover and leader authoritarianism. One study found a positive relationship between production-centered leader style and turnover.

Porter, L. W., & Steers, R. M. (1973). Organizational, work, and personal factors in employee turnover and absenteeism. Psychological Bulletin, 80, 151-176.

In the studies reviewed, aspects of supervision were consistently found to be related to turnover. Supervisor consideration was negatively related to turnover in five studies. Supervisory experience was negatively related to turnover in a study of technicians and engineers. Receipt of recognition and feedback were negatively related to turnover in a sample of engineers and a sample of female skilled workers.

Sheridan, J. E., & Vredenburgh, D. J. (1978). Usefulness of leadership behavior and social power variables in predicting job tension, performance, and turnover of nursing employees. Journal of Applied Psychology, 63, 89-95.

A sample of female nursing employees (N = 216) was administered a battery of instruments, including the Leader Behavior Description Questionnaire (LBDQ), a measure of the head nurse's power base, and a measure of the task structure of their jobs. Attrition data were gathered 1 year later. Head nurse's initiating structure was positively related to turnover, and consideration was negatively related to turnover. Consideration was the most useful predictor of turnover in a combined regression equation containing all variables. The interaction of task structure and leader's power base was significant: Coercive power, defined as the application of pressure or penalties to those who do not cooperate, was positively related to turnover in highly structured conditions and unrelated to turnover in unstructured conditions; expert power, defined as the possession of competence and experience, was negatively related to turnover in unstructured conditions and unrelated to turnover in structured conditions.

College Attrition

Studies of college attrition have focused primarily on academic and personality variables. There is strong evidence that individuals who voluntarily withdraw from college are generally lower in ability than persisters. Academic variables have been used successfully to classify students as persisters or voluntary dropouts. Analysis of personality variables indicates voluntary dropouts tend to be more autonomous, less conformist, and less committed to obtaining a degree than persisters. There is also some evidence that voluntary dropouts are less integrated socially. These results present a profile of the individual who withdraws from college as less able to adjust academically and socially to college life than the individual who persists to graduation.

Dollar, R. J. (1983). Selected factors for retention counseling with college of education students. College Student Journal, 17, 410-413.

The Omnibus Personality Inventory (OPI) was administered to 173 college of education freshmen within 2 weeks of enrollment. Academic performance, aptitude, and achievement information were available for each student. Persistence data were gathered 4 years later. Seventy-four students completed degrees in education, 31 transferred to another department and completed degrees, and 68 dropped out before

graduating. Dropouts differed significantly from persisters on three OPI scales: Dropouts were higher on impulse expression and lower on altruism and personal integration than persisters. In addition, dropouts had lower high school rank and English achievement test scores than persisters.

Dollar, R. J. (1985). Attrition of college of education students: A discriminant analysis. College Student Journal, 19, 152-156.

The Omnibus Personality Inventory (OPI) was administered to 156 college of education freshmen within 2 weeks of enrollment. Academic performance, aptitude, and achievement information were available for each student. Four years later, 67 students had completed education degrees, 28 had transferred, and 61 had dropped out without graduating. Inclusion of OPI scales in a discriminant equation in addition to the academic variables increased classification accuracy from 56.4 percent to 64.4 percent. Altruism and theoretical orientation scales contributed most to this improvement.

Getzlaf, S. B., Sedlacek, G. M., Kearney, K. A., & Blackwell, J. M. (1984). Two types of voluntary undergraduate attrition: Application of Tinto's model. Research in Higher Education, 20, 257-268.

Students who voluntarily attrited between first and second semester of their freshman year were divided into transfer and dropout groups. Precollege information and responses to a survey designed to measure a broad set of variables were available for each subject. Dropouts had lower verbal ability, academic integration, goal commitment, and social integration than transfers. Compared to a group of students who remained at the university, the combined attrite group had lower quantitative ability, academic integration, school commitment, and GPA.

Iwai, S. I., & Churchill, W. D. (1982). College attrition and the financial support systems of students. Research in Higher Education, 17, 105-113.

A questionnaire on financial support was administered to 1251 students enrolled in both first and second semester classes (persisters) and 598 students enrolled in first but not second semester (withdrawers). Persisters relied on more sources of financial support than withdrawers.

Maudal, G. R., Butcher, J. N., & Mauger, P. A. (1974). A multivariate study of personality and academic factors in college attrition. Journal of Counseling Psychology, 21, 560-567.

The MMPI and PRF were administered to 706 students within 1 week of college enrollment. Demographic and academic information were available from admission records. Students were identified 2 years later as persisters, transfers, or dropouts based on school records and survey responses. Classification of dropouts was most accurate using academic variables. Classification of transfers was most accurate using personality variables, such as need for achievement and social introversion. Combining all variables did not improve classification for either attrite group.

Pascarella, E. T., & Chapman, D. W. (1983). Validation of a theoretical model of college withdrawal: Interaction effects in a multi-institutional sample. Research in Higher Education, 19, 25-48.

The Student Involvement Questionnaire (SIO) was administered to 2410 freshmen from 11 colleges. Demographic and personality information were available on each

student. Goal commitment and institutional commitment were positively correlated with enrolling for a second year of study.

Rose, H. A., & Elton, C. F. (1971). Attrition and the vocationally undecided student. Journal of Vocational Behavior, 1, 99-103.

The Omnibus Personality Inventory (OPI) was administered to 290 freshman males undecided about an occupational career. ACT scores were obtained from student records. Four years later, students were classified as leavers (left prior to receiving degree) or stayers (completed a degree). Leavers scored significantly higher on nonconformity and masculine role scales of the OPI, and had lower ACT composite scores than stayers. The authors interpret the results as indicating "identity confusion" in the dropout group.

Smith, D. G. (1976). Personality differences between persisters and withdrawers in a small women's college. Research in Higher Education, 5, 15-25.

The Omnibus Personality Inventory (OPI) was administered to 322 college students from two classes within 1 year of beginning college. Academic, demographic, and achievement information were available from student records. Four years later, 160 students had completed a degree (persisters) and 141 had voluntarily withdrawn prior to completing a degree. Voluntary withdrawers had higher complexity and autonomy scores, and lower social extroversion, practical outlook, and intellectual disposition scores on the OPI than persisters. None of the academic, demographic, or achievement variables consistently discriminated persisters from voluntary withdrawers across the two classes.

Terenzini, P. T., & Pascarella, E. T. (1978). The relation of students' precollege characteristics and freshman year experience to voluntary attrition. Research in Higher Education, 9, 347-366.

Surveys were administered to 536 college freshmen prior to enrollment and during the second semester of study. Ninety students withdrew between freshman and sophomore years. Preenrollment characteristics explained less than 4 percent of the variance in attrition. Attrition was lowest when informal contact with faculty members was frequent, and the academic program was perceived as highly enjoyable, challenging, and relevant. Amount of faculty contact made the largest single contribution to prediction of attrition. The authors suggest that efforts to reduce attrition should focus on post-enrollment experiences.

Military Training Attrition

Research on military training attrition reveals the usefulness of individual differences in vocational interests, personality, and background as predictors of attrition. Several studies have successfully used empirical scales derived from interest inventories to distinguish between persisters, academic disenrollees, and motivational disenrollees. In general, motivational disenrollees are less likely to endorse items related to athletic, leadership, and military activities. In a study of female midshipmen, Neumann and Abrahams (1982) found attrites less often endorsed mechanical interests, athletic activities, and realistic-type items.

A broad range of personality variables have been studied. In general, attrites are distinguished from persisters by lower leadership qualities, such as competitiveness and assertiveness, and higher independence. There is also a tendency for attrites to be less well-adjusted psychologically than persisters.

Empirically developed biographical information scales have proven useful in discriminating attrites and persisters. There is some indication, however, that applicants slant responses to these scales (Mattson, Abrahams, & Hetter, 1985).

Expectations and intentions have also been examined in military samples. Compared to persisters, attrites typically have lower expectations of the military role and lower intention to remain in the military.

Abrahams, N. M., & Neumann, I. (1971). The assessment of career motivation among NROTC applicants with the Strong Vocational Interest Blank (Res. Rep. 72-9). San Diego: Naval Personnel and Training Research Laboratory.

The N-6 scale was empirically constructed from the Strong Vocational Interest Blank to distinguish officers who remained on active duty more than 15 months beyond their minimum service requirement (MSR) from those who left within 15 months. N-6 scores were obtained for NROTC and Naval Academy students. The N-6 scores of motivational disenrollees from NROTC were lower than scores of persisters; scores of persisters were lower than scores of members who transferred to the Naval Academy. Within the Naval Academy, N-6 scores of disenrollees were lower than scores of persisters.

Abrahams, N. M., & Neumann, I. (1973). The validation of the Strong Vocational Interest Blank for predicting Naval Academy disenrollment and military aptitude (Tech. Bulletin 73-3). San Diego: Naval Personnel and Training Research Laboratory.

Responses to Strong Vocational Interest Blank (SVIB) items were used to distinguish Naval Academy persisters from motivational and academic disenrollees. Motivational disenrollees had lower endorsement of items regarding leadership, military activities, sports, and extroversion than did persisters. Academic disenrollees had lower endorsement rates than persisters for SVIB items dealing with science and mechanical interests and achievement motivation. Early motivational disenrollment was more accurately predicted than late disenrollment. SVIB responses were also useful in predicting military aptitude scores.

Atwater, D. C., Abrahams, N. M., & Trent, T. T. (1986). Validation of the Marine Corps Special Assignment Battery (SAB) (Tech. Rep. 86-18). San Diego: Navy Personnel Research and Development Center.

Marines who failed to complete recruiter school had lower SAB recruiter composites than those who completed training. This difference was statistically nonsignificant, however. Scores on the drill instructor composite were positively correlated with completion of drill instructor training. Marines scoring in the bottom quintile on the drill instructor composite had a 47 percent dropout rate; those in the top quintile had a 22 percent dropout rate.

Bronzo, A. F. (1967). Preliminary investigation of AFROTC cadet attrition. The Journal of Psychology, 66, 185-190.

Surveys to assess bureaucratic tendencies and values were completed by 94 cadets and 89 cadet dropouts. Dropouts valued bureaucratic networks and leadership less than persisters, and valued independence and variety more than persisters.

Butler, R. P., Lardent, C. L., & Miner, J. B. (1983). A motivational basis for turnover in military officer education and training. Journal of Applied Psychology, 68, 496-506.

Study 1: A random sample of 502 students at the U.S. Military Academy completed the Miner Sentence Completion Scale (MSCS) Form H at the time of admission. Those who voluntarily resigned (N = 189) scored lower than those who persisted on MSCS subscales measuring desire to be active and assertive, desire to influence others, and desire to perform day-to-day administrative duties. In addition, those who resigned had lower overall MSCS scores, indicating lower motivation to manage.

Study 2: A total of 251 students at Army Officer Candidate School were administered multiple choice versions of the MSCS within 2 weeks of admission. Nongraduates (N = 29) scored lower than graduates on MSCS subscales measuring desire to compete in sports, desire to compete in work-related activities, and desire to be active and assertive. Nongraduates also scored lower overall, indicating lower motivation to manage.

Frey, R. L., Jr. (1985). Gender, ethnic group, aptitude, and personality determinants of U.S. Coast Guard attrition. Proceedings of the 27th Annual Conference of the Military Testing Association, 736-740.

The use of personality and aptitude scores as predictors of turnover was investigated in a group of 4288 Coast Guard recruits. Breakdown of the sample based on gender and ethnic group was as follows: 3732 males, 556 females; 3544 racial majority, 744 racial minority. The aptitude score was a composite of verbal and arithmetic subtests from the ASVAB or comparable aptitude test. Personality was assessed with the Sixteen Personality Factor Questionnaire (16PF) and the Clinical Analysis Questionnaire (CAQ). Attrition prior to completion of the first 4-year term of enlistment was determined through personnel records. Attrition was higher for the minority group than the majority group, and higher for women than men. Aptitude was higher for stayers than attrites by .2 standard deviation in the majority group; no difference in aptitude was found for minority stayers and attrites. Warmth and sensitivity were higher for minority attrites than stayers; no differences were found for the majority group. Depression, hypochondriasis, and psychological inadequacy were higher for attrites than stayers in both majority and minority groups.

Lachar, D. (1974). Prediction of early U.S. Air Force freshmen cadet adaptation with the MMPI. Journal of Counseling Psychology, 21, 404-408.

MMPI scores were used to identify 6 percent of the cadets as high risk for pathology or nonadaptive characteristics, 6 percent as borderline, and 88 percent as deviance unlikely. Within a 2 month period, 24.7 percent of the high risk group left the Academy; 10.9 percent of the combined borderline and deviance unlikely groups left the Academy.

Mattson, J. D., Abrahams, N. M., & Hetter, R. D. (1985). Use of personal history information to predict Naval Academy disenrollment. Proceedings of the 27th Annual Military Testing Association Conference, 503-508.

An empirical scale designed to distinguish disenrollees from persisters was developed from the Personal History Questionnaire (PHQ). Disenrollment scale scores were significantly related to attrition. When combined with the selection battery previously in use, the disenrollment scale significantly increased prediction of attrition. There was

some indication that applicants slanted responses to the PHQ to increase their chances of admission.

Mobley, W. H., Hand, H. H., Baker, R. L., & Meglino, B. M. (1979). Conceptual and empirical analysis of military recruit training attrition. Journal of Applied Psychology, 64, 10-18.

Measures of role expectancy, expected organizational characteristics, and demographic characteristics were completed by 1521 Marine Corps recruits. Recruits who left prior to completion of training had fewer years of formal education, were more likely to be married, and scored lower on the AFQT than recruits who completed training. Attrites reported lower role expectations, lower role attraction, lower role force, and lower expectations of leader structure than persisters. The best predictor of attrition was expectance of completing enlistment.

Neumann, I. (1976). Validation of the SVIB career tenure scale (N-6) against actual career decision for NROTC officers entering in 1964 and 1965 (Letter Report). San Diego: Navy Personnel Research and Development Center.

A total of 1686 officers were divided into high tenure (N = 519) and low tenure (N = 1167) groups. High tenure was defined as remaining on duty at least 1 year beyond minimum commitment; low tenure included leaving within 1 year of minimum commitment and disenrolling prior to completion of commitment. Scores on a vocational interest key developed previously to predict Navy officer attrition (the N-6 scale) were significantly correlated with tenure status.

Neumann, I., & Abrahams, N. M. (1974). Identification of Naval Academy applicants with engineering and science interest (Tech. Rep. 75-7). San Diego: Navy Personnel Research and Development Center.

A scale designed to differentiate midshipmen choosing engineering and science majors from those choosing other majors was administered to 1305 midshipmen during their first week at the Naval Academy. Scale scores were positively related to remaining in the academy. Disenrollment rates were 35 percent for the bottom quintile and 20 percent for the top quintile.

Neumann, I., & Abrahams, N. M. (1976). Empirical weighting of predictors for the Naval Academy selection program (Tech. Rep. 76-37). San Diego: Navy Personnel Research and Development Center.

When an empirical disenrollment scale was included with the previous selection composite, prediction of voluntary disenrollment was improved. Results from three Academy classes indicate the disenrollment scale is less valid for predicting resignation when administered prior to selection than after selection.

Neumann, I., & Abrahams, N. M. (1978). Identification of NROTC applicants with engineering and science interests (Tech. Rep. 78-31). San Diego: Navy Personnel Research and Development Center.

The E-S (N) scale was empirically constructed from the Strong Vocational Interest Blank (SVIB) to differentiate engineering and science majors from other majors. No relationship was found between disenrollment and E-S (N) scale scores in a sample of 1430 midshipmen.

Neumann, I., & Abrahams, N. M. (1982). Validation of Naval Academy selection procedures for female midshipmen (Tech. Rep. 82-54). San Diego: Navy Personnel Research and Development Center.

Two empirical scales were developed from the Strong-Campbell Interest Inventory (SCII) to identify women likely to attrite. In a sample of 126 women, both scales were more highly correlated with resignation than the disenrollment scale previously in use, but were also negatively correlated with academic and military success criteria. Item inspection revealed three clusters endorsed more often by persisters than attrites: mechanical interests, athletic activities, and realistic-type items.

Riegelhaupt, B. J., & Bonczar, T. P. (1985). The utility of educational and biographical information for predicting military attrition. Proceedings of the 27th Annual Conference of the Military Testing Association, 491-496.

A population of 3092 nongraduate male military recruits was divided into weighting (N = 1854) and cross-validation (N = 1238) samples. An Educational and Biographical Information Survey (EBIS) was developed and administered to the recruits. Individuals were categorized as leavers if they attrited within 12 months of entrance. Leavers scored lower than stayers on educational achievement, school behaviors, and attitudes (e.g., activities, disciplinary incidents, reasons for thinking about quitting), and alcohol or drug use in both samples. The differences between leavers and stayers, while statistically significant, were small in magnitude.

Rosenbaum, H. (1985). Attrition and performance ratings of ESL soldiers in BT. Proceedings of the 27th Annual Conference of the Military Testing Association, 815-820.

As part of the Basic Skills Education Program, 583 soldiers participated in English-as-a-second-language (ESL) classes. Compared to 505 soldiers who completed basic learning (BT), the 78 soldiers who were subsequently discharged from BT had lower English comprehension scores before and after ESL, and made smaller gains in English comprehension during ESL.

Youngblood, S. A., Laughlin, J. E., Mobley, W. H., & Meglino, B. M. (1980). A longitudinal analyses (sic) of military recruit attrition: The first 25 months (Tech. Rep. 11). Columbia, SC: Center for Management and Organizational Research.

Surveys assessing individual and organizational variables were administered to 1520 male Marine Corps recruits on four occasions: before recruit training, after recruit training, near the end of advanced training, and after assignment to duty station. Based on attrition data, recruits were divided into four groups: (1) stayed with Marine Corps at least 25 months, (2) left after assignment to duty station but prior to 25 months of duty, (3) left after training but prior to duty assignment, and (4) left before completion of training. At each occasion, the new attrite group was distinguished from those who went on to the next phase by lower satisfaction levels, lower intentions to reenlist, and lower intentions of completing the first term of enlistment. In addition, group 4 was distinguished from groups 1, 2, and 3 by lower expected chances of completing the first term and lower attraction of the Marine role; group 2 was distinguished from group 1 by lower attraction to the work group and lower perceived proficiency of the work group.

Youngblood, S. A., Mobley, W. H., & Meglino, B. M. (1983). A longitudinal analysis of the turnover process. Journal of Applied Psychology, 68, 507-516.

Surveys assessing expectations, intentions, and satisfaction were completed by 1445 male Marine Corps enlistees on three occasions: At entry into training, after completion of training, and after assignment to duty station. Demographic and test score information were available for each enlistee. Compared to those who completed training, those who attrited had fewer years of formal education and lower achievement test scores. Attrites reported less favorable expectations of the military role, lower intentions to complete enlistment, and lower intentions to reenlist than did persisters. Level of satisfaction decreased over time for all groups, but the decline was more pronounced for attrites.

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